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09/597,218	06/20/2000	Kimio Yamakawa	TSL1549	5276

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EXAMINER

GRAYBILL, DAVID E

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/597,218

Applicant(s)

YAMAKAWA ET AL.

Examiner

David E. Graybill

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

In the rejections infra, reference labels are generally recited only for the first recitation of identical claim language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7, 8, 10-14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayoshi (JP7292343),

or in the alternative, over the combination of Nakayoshi (JP7292343) and Sierawski (5882467).

In the JPO and Derwent English abstracts, the Japanese Patent Office translation sections [0020] and [0021], and the figures, Nakayoshi teaches the following:

1. An adhesive composition for bonding a semiconductor chip to an attachment member for the chip comprising a curable polymer composition comprising from 1000 to 1,000,000 weight-ppm spherical filler having an average particle size of from 10 to 100  $\mu\text{m}$  and a major axis-to-minor axis ratio of from 1 to 1.5.
2. The adhesive composition of 1, where the spherical filler has a particle size distribution with a standard deviation that does not exceed 10% ["3.0 micrometers or less"] of the average particle size of the filler.
4. The adhesive composition of 1, where the spherical filler is an inorganic spherical filler.
5. The adhesive composition of 1, where the curable polymer composition is a curable silicone composition.
7. The adhesive composition of 1, where the spherical filler has a major axis-to-minor axis ratio of from 1.0 to 1.1.
8. The adhesive composition of 1, where the curable polymer composition is an addition reaction-curable silicone composition.

10. A semiconductor device comprising a semiconductor chip bonded to an attachment member for the chip by an adhesive composition comprising a curable polymer composition comprising from 1000 to 1,000,000 weight-ppm spherical filler having an average particle size of from 10 to 100 um and a major axis-to-minor axis ratio of from 1 to 1.5.

11. The semiconductor device according to 10, where the spherical filler has a particle size distribution with a standard deviation that does not exceed 10% of the average particle size of the filler.

13. The semiconductor device according to 10, where the spherical filler is an inorganic spherical filler.

14. The semiconductor device according to 10, where the curable polymer composition is a curable silicone composition.

16. The semiconductor device according to 10, where the spherical filler has a major axis-to-minor axis ratio of from 1.0 to 1.1.

17. The semiconductor device of 10, where the curable polymer composition is an addition reaction-curable silicone composition.

However, Nakayoshi does not appear to literally teach the polymer composition comprising the particular range from 1 to

900 weight-ppm spherical filler or the following particular ranges:

3. The adhesive composition of 1, where the curable polymer composition comprises from 1 weight-ppm to 700 weight-ppm spherical filler.

12. The semiconductor device according to 10, where the curable polymer composition comprises from 1 weight-ppm to 700 weight-ppm spherical filler.

Nonetheless, Nakayoshi teaches that in a process of manufacturing the claimed adhesive, filler weight-ppm is a result-effective variable. Moreover, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed filler weight-ppm range limitations because applicant has not disclosed that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another weight-ppm. Indeed, it has been held that optimization of range limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See MPEP 2144.05(II): "Generally,

differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.'" In re Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). See also In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969), Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989), and In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990). As set forth in MPEP 2144.05(III), "Applicant can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range. 'The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.' In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 716.02 - § 716.02(g) for a discussion of criticality and unexpected results."

Because applicant cites Nakayoshi in the original disclosure, it appears that applicant considers the claims unpatentable over Nakayoshi alone. Therefore, in the alternative, the claims are further rejected under 35 U.S.C. 103(a) as obvious over the combination of Nakayoshi and Sierawski.

Specifically, Nakayoshi does not appear to explicitly teach the polymer composition comprising from 1 to 900 weight-ppm spherical filler or the following:

3. The adhesive composition of 1, where the curable polymer composition comprises from 1 weight-ppm to 700 weight-ppm spherical filler.

12. The semiconductor device according to 10, where the curable polymer composition comprises from 1 weight-ppm to 700 weight-ppm spherical filler.

Nonetheless, at column 10, lines 34-43, Sierawski teaches an adhesive polymer composition comprising from 1 to 700 weight-ppm spherical filler ["less than about 20 weight percent"]. Moreover, it would have been obvious to combine the product of Sierawski with the product of Nakayoshi because it would provide a filler as taught by Nakayoshi, and selection of an art recognized element based on its suitability for its intended use has been held to be obvious. See MPEP 2144.07.



Claims 6, 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Nakayoshi (JP7292343) and Sierawski (5882467).

The combination of Nakayoshi and Sierawski is applied as it was applied to claims 1 and 10 supra.

Further, Nakayoshi does not appear to explicitly teach the following:

6. The adhesive composition of 1, where the curable polymer composition is a curable epoxy resin composition.

9. The adhesive composition of 1 further comprising a thixotropic agent where the thixotropic agent has a specific surface area of 50 to 500 m<sup>2</sup>/g.

15. The semiconductor device according to 10, where the curable polymer composition is a curable epoxy resin composition.

Nevertheless, the quality of being a thixotropic agent is an inherent property of the composition of the applied prior art.

In addition, at column 3, line 24 to column 4, line 32, and column 8, lines 52-67, Sierawski teaches where a curable polymer composition is a curable epoxy resin composition comprising a filler that has a specific surface area of 50 to 500 m<sup>2</sup>/g ["at least 50 square meters per gram"].

Furthermore, it would have been obvious to combine the product of Sierawski with the product of Nakayoshi because it would provide a polymer composition and a filler.

Applicant's remarks filed 1-27-3 have been fully considered, are addressed in the rejection supra, and are further addressed infra.

Applicant's argument that the scope of the claim term "inorganic" as defined in the specification at page 4, line 20 to page 5, line 1, is limited to the particular recited materials including the organic materials carbon and silicon carbide is deemed persuasive.

Applicant argues that the rejection of the claims over Nakayoshi is improper because, allegedly, Nakayoshi teaches away from the instant claimed invention. This argument is respectfully traversed because Nakayoshi merely teaches examples and preferred embodiments, and disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 169 USPQ 423 (CCPA 1971). "A known or obvious composition [such as the instant claimed adhesive composition] does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." In re Gurley, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). A reference may be relied upon for

all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. Merck & Co. v. Biocraft Laboratories, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989).

To further clarify, a prior art opinion that a claimed invention is not preferred for a particular limited purpose, does not preclude utility of the invention for that or another purpose, or even preferability of the invention for another purpose.

Moreover, even a teaching away from a claimed invention does not necessarily render the invention patentable. See Celeritas Technologies Ltd. v. Rockwell International Corp., 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998), where the court held that the prior art anticipated the claims even though it taught away from the claimed invention. "The fact that a modem with a single carrier data signal is shown to be less than optimal does not vitiate the fact that it is disclosed."

Similarly, in In re Geisler, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997) applicant argued that the prior art taught away from use of a protective layer for a reflective article having a thickness within the claimed range of "50 to 100 Angstroms." Specifically, a patent to Zehender, which was

relied upon to reject applicant's claim, included a statement that the thickness of the protective layer "should be not less than about [100 Angstroms]." The court held that the patent did not teach away from the claimed invention. "Zehender suggests that there are benefits to be derived from keeping the protective layer as thin as possible, consistent with achieving adequate protection. A thinner coating reduces light absorption and minimizes manufacturing time and expense. Thus, while Zehender expresses a preference for a thicker protective layer of 200-300 Angstroms, at the same time it provides the motivation for one of ordinary skill in the art to focus on thickness levels at the bottom of Zehender's suitable range - about 100 Angstroms - and to explore thickness levels below that range. The statement in Zehender that [i]n general, the thickness of the protective layer should be not less than about [100 Angstroms] falls far short of the kind of teaching that would discourage one of skill in the art from fabricating a protective layer of 100 Angstroms or less. [W]e are therefore not convinced that there was a sufficient teaching away in the art to overcome [the] strong case of obviousness made out by Zehender." See MPEP 2144.05II and MPEP 2145, paragraph X.D..

Applicant also alleges unexpected results, and cites originally disclosed Example 1 and Comparative Example 2 as

factual evidence that the results are unexpected and unobvious and of both statistical and practical significance.

The allegation of unexpected results is respectfully deemed unpersuasive because the evidence refers only to the system described in the instant application and not to the individual claims of the application, nor directly to the disclosed invention of Nakayoshi. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims or the scope of the invention of Nakayoshi. See MPEP § 716.

The allegation is also deemed insufficient because the objective evidence of nonobviousness is not commensurate in scope with the claims. In particular, the showing of alleged unexpected results are not reviewed to determine whether the results occur over the entire claimed range. In re Clemens, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980).

Similarly, the allegation is insufficient because it does not compare the claimed invention with the closest prior art which is commensurate in scope with the claims. For example, the claimed 500 weight-ppm filler is compared to 157 weight parts filler; yet, the closest explicitly recited embodiment of Nakayoshi commensurate in scope with the claims is 1000 weight-ppm filler.

Applicant also traverses the statement of motivation, "it would have been obvious to combine the product of Sierawski with the product of Nakayoshi because it would provide a filler," because, applicant proffers, "the mere fact that the prior art may be modified as suggested by the Examiner does not make the modification obvious unless the prior art suggests the desirability of the modification." This traversal is respectfully traversed because it is well established that the selection of an art recognized element based on its suitability for its intended use supports a prima facie obviousness determination. See MPEP 2144.07, in particular, *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945); and *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment). Therefore, to paraphrase *In re Leshin supra*, selection of the spherical

filler of Sierawski to make an adhesive polymer composition of a type made of spherical filler as taught by Nakayoshi would have been obvious.

Relatedly, applicant argues that it would not have been obvious to combine the filler of Sierawski with the product of Nakayoshi because, "Nakayoshi already discloses a filler."

This argument is respectfully deemed to be unpersuasive because it is precisely Nakayoshi's teaching of a filler that contributes to the motivation to combine the filler of Sierawski with the product of Nakayoshi; namely, to provide a filler as taught by Nakayoshi.

To further clarify, as cited *supra* in *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988), the claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function. In other words, even though the prior art already disclosed a brake, it was held to have been obvious to substitute the brake of the references for the brake of the prior art because it is obvious to select an art recognized element based on its suitability for its intended use.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to Group 2800 Customer Service whose telephone number is 703-306-3329.***

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/308-7722.

*David E. Graybill*

David E. Graybill  
Primary Examiner  
Art Unit 2827



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D.G.  
15-Jun-03